Flood Protection Corridor Program

Project Evaluation Criteria

And Competitive Grant Application Form

I. Introduction

Grant funds under the Flood Protection Corridor Program (FPCP) of the Costa Machado Water Act of 2000 (Proposition 13) are available to local public agencies and nonprofit organizations from the Department of Water Resources. Funds will be used to pursue FPCP goals, which are to provide "for the protection, creation, and enhancement of flood protection corridors through all of the following actions:

"(1) Acquiring easements and other interests in real property from willing sellers to protect or enhance flood protection corridors and floodplains while preserving or enhancing the agricultural use of the real property.

"(2) Setting back existing flood control levees and, in conjunction with undertaking those setbacks, strengthening or modifying existing levees.

"(3) Acquiring interests in real property from willing sellers located in a floodplain that can not reasonably be made safe from future flooding.

"(4) Acquiring easements and other interests in real property from willing sellers to protect or enhance flood protection corridors while preserving or enhancing the wildlife value of the real property."

-- [Water Code, Chapter 5, Article 2.5, Section 79037(b)]

The following information constitutes the basis for determining whether a proposed project meets the legal criteria for funding under the Flood Protection Corridor Program and for evaluating the proposal to determine its priority in competition with all concurrent proposals. Proposals qualified under Section III of these criteria will be placed on one of two priority lists. If the proposal serves a flood protection need that is a high priority with the Department of Water Resources (other than through this Program) and it also rates a high priority *either* with the Department of Conservation for purposes of preserving agricultural land under the California Farmland Conservancy Program, *or* with the Department of Fish and Game for purposes of wildlife habitat or restoration, it will be placed on the "A List". All other qualified projects will be placed on the "B List". "A List" projects will be funded first, and when all "A List" projects have been funded to the Department's stated limit, "B List" projects will be funded.

II. General Information

Project Name: Middle Creek Flood Damage Reduction and Ecosystem Restoration Project

Project Location: North shore of Clear Lake, Upper Cache Creek Basin, at mouth of Middle and Scotts Creeks County: Lake

Name and address of sponsoring agency or non-profit organization: Lake County Flood Control and Water Conservation District, 255 N Forbes Street, Lakeport, CA 95453

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Name of Project Manager (contact):
Robert L. A. Lossius, Assistant Public Works Director

Phone Number: 707-263-2341_____ E-mail Address: bob_l@co.lake.ca.us

Grant Request Amount: $14,214,000

_____ Assistant Public Works Director

Project Manager Title

_____

Date

Project Objective(s): Briefly describe your project and explain how it will advance FPCP goals. Please also include a detailed map of the immediate project site and another that shows its location within your geographical area. Photographs showing problem areas proposed to be enhanced by the project should also be included.

The Middle Creek Flood Damage Reduction and Ecosystem Restoration Project (Project) is one step in the process of restoring damaged habitat and the water quality of the Clear Lake watershed. Reconnection of this large previously reclaimed area, as a functional wetland is anticipated to have a significant affect on the watershed health and the water quality of Clear Lake. The Project will also eliminate flood risk to 20 residential structures, numerous outbuildings and approximately 1,400 acres of agricultural land. This grant application is for the local cost share for property acquisition, construction and restoration of the Middle Creek Flood Damage Reduction and Ecosystem Restoration Project.

The Project is located at the north end of Clear Lake in the area bounded by State Highway 20 and Rodman Slough, see Figure 1. Clear Lake is a large, natural, shallow, eutrophic lake. It is the headwaters of Cache Creek, a tributary of the Bay-Delta. The Scotts Creek and Middle Creek watersheds, which comprise approximately one half of the Clear Lake watershed, drain through Rodman Slough adjacent to the project area. These two watersheds provide 57 percent of the inflow and 71 percent of the phosphorus loading to Clear Lake. Fourteen hundred acres of "reclaimed" wetlands are located in the Project area.

In 1994, the EPA Clean Lakes Diagnostic/Feasibility Study for Clear Lake was completed. Sediment nutrients are primarily responsible for the cultural eutrophication of Clear Lake and the resulting chronic blue-green algal blooms. The Clean Lakes Study identified a significant degradation in Clear Lake's water quality between 1920 and 1940. The Clean Lakes Study recommends numerous actions be taken to reduce the frequency and magnitude of the blue-green algal blooms. The County of Lake adopted an Implementation Plan on July 19, 1994 identifying the recommended actions and a time line for their implementation. The Plan is to improve the watershed health of the Clear Lake watershed and improve the quality of Clear Lake.

The District is currently implementing stream bank rehabilitation projects and actively encouraging the implementation of erosion control projects within the Clear Lake watershed. The District is cooperating with the USDA Forest Service, USDA Natural Resources Conservation Service, the USDI Bureau of Land Management, Eastlake and Westlake Resource Conservation Districts, and local Coordinating Resource Management Planning (CRMP) groups to improve management of the watershed. Restoration of the Middle Creek ecosystem is one step in reducing the nuisance blue-green algal blooms in Clear Lake by addressing one of the largest sediment sources within the watershed.

The Middle Creek Ecosystem project area (Robinson Lake) was "reclaimed" in between 1900 and 1940 by constructing levees, creating a slough and reclaiming approximately 1,200 acres of lake bottom and shoreline wetlands for agricultural purposes. In 1958, the U.S. Army Corps of Engineers (Corps) added to the levee system, reclaiming an additional 200 acres of shoreline wetlands. These projects resulted in the physical isolation of over 1,650 acres of marsh and floodplain from the largest tributaries of Clear Lake. Figures 2 and 3 show the 1916 and current configurations of the Project area. A recent sediment core collected by the University of California, Davis (UCD), shows an abrupt increase in sedimentation rates around 1927, corresponding to the beginning of the large-scale reclamation of Robinson Lake and other major construction projects in the Clear Lake watershed.

The Project consists of reconnecting Scotts and Middle Creek to the historic Robinson Lake wetland and floodplain areas by breaching the existing levee system to create inlets that direct flows into the historically flooded area. Diversion of flows through the wetland area is estimated to reduce the phosphorus load from Middle and Scotts Creeks to Clear Lake by 40 percent. Based on Vollenweider's phosphorus mass-balance model, this would result in a 28 percent decrease in the average phosphorus levels in Clear Lake, and a 33 percent decrease in average chlorophyll levels.

In June 1999, the Corps began a Feasibility Study that evaluated six alternative projects, including the No Action, three restoration alternatives, and a non-structural and a structural flood damage reduction alternatives. The restoration alternatives all include reconnecting the area adjacent to Clear Lake and Rodman Slough, with the primary difference being the northern limit of the Project area. The pure flood damage reduction alternatives were not cost-effective. During the Feasibility Study that reviewed flood damage reduction, habitat and other benefits, it was determined the most beneficial project would be full restoration of the Project area, see Figure 4. Environmental review as required by NEPA and CEQA was conducted concurrent with the Feasibility Study. The Final Feasibility Study/Environmental Impact Statement/Environmental Impact Report was issued in September 2002.

The entire Project are is located within a FEMA mapped 100-year floodplain, see Figure 5. The Project will provide the following Flood Damage Reduction benefits:

- Reduce flood risk by removing structures at risk of severe flooding as a result of levee failure. The levees proposed for abandonment have settled up to three feet below design grade. The Corps has determined that the levees provide only a four-year level of protection (the levees were designed to provide a 100-year level of protection) and will overtop during a 35-year flood event, unless emergency flood fight measures are implemented. The area was evacuated in 1983, 1986 and 1998, with evacuation imminent in 1995.

- Should the levees fail, flood damage would be extensive. There are 20 homes and numerous outbuildings subject to flooding should the levees fail. Approximately 1,500 acres of agricultural land would be flooded. Over three miles of public roads would be flooded or put at risk of flood damage. A major, high voltage PG&E transmission line crosses the Project area and is vulnerable to flood damage. Because flood depths are great (over 5 feet in most locations) and would extend for extended periods, potential flood damages are high.

- The California Department of Water Resources (DWR) currently maintains the Middle Creek Flood Control Project in the Project area. The Project would remove approximately three miles of substandard levees, one pumping station and one weir structure from the Flood Control Project. These levees were never constructed to proper standards and are the most prone to failure during a major flood event. The pumping station is 45 years old and in need of major repairs, primarily due to age and levee settlement. Reconstruction of the levees and pump station repair are estimated to be in excess of $6,000,000. The

Project would result in lower O&M (estimated at $160,000 per year) and emergency response costs (estimated in excess of $300,000 per major flood event) for DWR and cooperating State and Federal agencies.

The Project would provide the following habitat benefits:

- Restore up to 1,400 acres of the 7,520 acres of historic wetlands in the Clear Lake Basin that have either been lost or severely impacted. This is a 79 percent increase in the Basin's existing wetland habitat. Of the historic 9,300 acres of freshwater wetlands that existed in the Clear Lake Basin, approximately 7,520 acres (80 percent) have been lost or severely impacted. Restored habitat includes open water, seasonal wetlands, instream aquatic habitat, shaded aquatic habitat, and perennial wetlands. Additional upland habitat will be protected adjacent to the wetland and stream areas.

- Provide a significant increase in habitat for fish and wildlife. This Project would greatly improve the bird-nesting habitat and increase the available spawning habitat for native and non-native fish. The area is currently used extensively by migratory waterfowl.

- Preserve the fish and wildlife resources and the cultural resources in the project area.

- Several special-status wildlife species could benefit from the creation of wetland, open water, and riparian habitats in the expanded floodplain. Some species include the California red-legged frog, northwestern pond turtle, American white pelican, double-crested cormorant, western least bittern, osprey, white-tailed kite, bald eagle, northern harrier, Cooper's hawk, American peregrine falcon, California yellow warbler, yellow-breasted chat, tricolored blackbird, fringed myotis, long-eared myotis, long-legged myotis, pallid bat, and Townsend's western big-eared bat.

The Project will reduce the amount of sediment and nutrient inputs to Clear Lake producing the following water quality benefits:

- Sediment is the primary nutrient source (97 percent of Clear Lake's total phosphorus load is sediment bound) contributing to the cultural eutrophication of Clear Lake. It has been estimated that the current sediment and phosphorus load is twice the pre-European sediment load. Approximately 71 percent of the sediment and phosphorus entering Clear Lake is from Scotts and Middle Creeks. It has been estimated that the Project would remove up to 40 percent of phosphorus entering Clear Lake from Middle and Scotts Creeks. Reduced phosphorus concentrations in Clear Lake would potentially reduce the chlorophyll concentrations by 33 percent. A corresponding reduction in total organic carbon would also be realized;

- Wetlands are known to efficiently remove nitrogen from the water column. Because the Project are is hydraulically connected to Clear Lake, it would provide some nitrogen removal benefits to Clear Lake. These benefits are unknown and have not been quantified;

- Improved water quality in Clear Lake will reduce the cost of treating lake water to drinking water standards; and

- Recreation and tourism will be enhanced by improving the water quality in Clear Lake. In 1994, the USDA Soil Conservation Service estimated that $7 million in tourism is lost annually due to water quality issues in Clear Lake.

- The Project will have an unknown, and possibly beneficial, impact on vector control issues in the area. A diverse wetland and riparian community will replace several hundred acres of rice fields and flood-irrigated pasture. Natural predators may result in lower insect production in the area.

It is anticipated that the Project will impact the Clear Lake ecosystem quickly. The project area was active freshwater marsh less than 80 years ago and already has significant quantities of native wetland vegetation in the project area. The existing vegetation and the inherent soil properties will facilitate rapid re-establishment of the native habitat. Pilot plantings will be used in the Project area to supplement natural revegetation.

Water quality improvement in Clear Lake should be fully realized within 10 years, with some improvement almost immediately apparent. Improved regulation of instream gravel mining was implemented in 1980, with instream mining decreasing each year until 1991, when all instream mining ceased. The clarity of Clear Lake improved significantly in 1991, and has been the clearest in recent memory for the last ten years. We anticipate the reduced phosphorus loading to Clear Lake after the Project is constructed to become apparent within a similar time frame.

Note: Technical backup for this grant application is included in the Final Integrated Feasibility Report and Environmental Impact Statement/Environmental Impact Report dated September 2002.

***To be complete, an application package must include all of the items specified in the proposed Section 497.7 of Title 23, California Code of Regulations, Division 2, that is available on the FPCP web site (www.dfm.water.ca.gov/fpcp) by selecting the Regulations link.**

III. Minimum Qualifications

Project proposals that do not meet the minimum qualifications will not be accepted.

A. ☐ The project proposes to use any granted funds for protection, creation, and enhancement of flood protection corridors *[Water Code Section 79037(b)]*.

B. ☐ A local public agency, a non-profit organization, or a joint venture of local public agencies, non-profit organizations, or both proposes the project *[Water Code Section 79037(a)]*.

C. ☐ The project will use the California Conservation Corps or a community conservation corps whenever feasible *[Water Code Section 79038(b)]*.

D. ☐ If it is proposed to acquire property in fee to protect or enhance flood protection corridors and floodplains while preserving or enhancing agricultural use, the proponent has considered and documented all practical alternatives to acquisition of fee interest *[Water Code Section 79039(a)]*.

E. ☐ Holders of property interests proposed to be acquired are willing to sell them *[Water Code Section 79040]*.

F. ☐ If it is proposed to acquire property interests, the proposal describes how a plan will be developed that evaluates and minimizes the impact on adjacent landowners prior to such acquisition and evaluates the impact on the following *[Water Code Section 79041]*:

- ►Floodwaters including water surface elevations and flow velocities
- ►The structural integrity of affected levees
- ►Diversion facilities
- ►Customary agricultural husbandry practices
- ►Timber extraction operations

The proposal must also describe maintenance required for a) the acquired property, b) any facilities that are to be constructed or altered.

G. ☐ The project site is located at least partially in one of the following:

1. A Federal Emergency Management Agency (FEMA) Special Flood Hazard Area (SFHA), or

2. An area that would be inundated if the project were completed and an adjacent FEMA SFHA were inundated, or

3. A FEMA SFHA, which is determined by using the detailed methods identified in FEMA Publication 37, published in January 1995, titled “Flood Insurance Study Guidelines and Specifications for Study Contractors”, or

4. A floodplain designated by The Reclamation Board under Water Code Section 8402(f) *[Title 23, California Code of Regulations, Division 2, Section 497.5(a)],* or a

5. Locally designated Flood Hazard Area, with credible hydrologic data to support designation of at least one in 100 annual probability of flood risk. This is applicable to locations without levees, or where existing levees can be set back, breached, or removed. In the latter case, levee setbacks, removal, or breaching to allow inundation of the floodplain should be part of the project.

IV. (340 points) Flood Protection Benefits

A. Existing and potential urban development in the floodplain (50)

1. Describe the existing and potential urban development at the site and the nature of the flood risk.

The Project area has been developed for agriculture (pears, grapes, wild rice and pasture) and rural residential uses. There are 20 floodprone residential structures and associated outbuildings. Because of the high flood depth (5-10 feet at existing homes), poorly drained soils, and high levee maintenance cost (assessed for State Maintenance Area 17), future residential or commercial development in the Project area is not likely.

The homes are protected from flooding by a levee system that was originally constructed circa 1920 and was improved by the US Army Corps of Engineers from 1958 through 1966. The soft soils in the area compacted and failed due to the increased load imposed by the new levee construction. Construction was stopped several times due to levee failures and alternative construction methods were developed, however, they also failed. The levees were not constructed to the height and cross-section to meet Corps standards. The State of California conditionally accepted the levees in 1966. The levees deteriorated due to settlement and slope failure, and now provide approximately a 4-year level of protection (risk based analysis by the Corps).

The primary flooding source in the Project area is Clear Lake. Because of the natural limitations to the discharge capacity of Cache Creek, Clear Lake can remain above flood stage for several weeks at a time. Because water levels remain high for extended periods, the levee section becomes saturated and is prone to slope failure, as well as overtopping.

2. How often has flooding occurred historically?

The original levee failed several times between 1920 and 1958, with the last failure during the winter of 1958, when several homes were flooded. Since 1958, the homes in the northern section of the Project area have not been flooded, however, mandatory evacuations were ordered in 1983, 1986 and 1998. Voluntary evacuations were made during 1995. The southern section of the Project area flooded in 1983, 1986, 1995 and 1998 due to overtopping of the levee. Major structural repairs were required after the 1998 flood to repair damage caused by the overtopping. Slope failures of the levee section in the northern portion of the Project area occurred in 1983 and 1998. The flood events of 1983, 1986 and 1998 were all essentially 35-year flood events and had peak water levels several inches over the top of the levees in several locations. Extended flood fight efforts (two to three months) by the District, with the assistance of the State of California, were required to prevent levee failure.

3. Discuss the importance of improving the flood protection at this location. Include the number of people and structures that are affected by the flood hazard, and the flood

impacts to highways and roads, railroads, airports and other infrastructure, and agriculture.

There are 20 homes in the floodplain. Catastrophic failure of the levee, such as occurred in the southern area in 1998, would result in significant flood depths in the entire project area in a short time period. Reportedly, the levee failure in 1958 resulted in flood depths in excess of 6 feet in less than 8 hours. Clear Lake remains at flood stage for extended periods, and the Project area does not naturally drain into Clear Lake (approximately 1,400 acres of the Project area are below Clear Lake's normal high water level). Therefore, flooding would probably extend for many months, resulting in substantial damage to nearly all structures within the floodplain. The loss of property and displacement of residents during and after the flood creates a significant financial cost to the property owners and public services.

If the levees fail when Clear Lake is above a 15-year flood event, the resulting floodwater would flood State Highway 20 between Nice and Upper Lake, closing the highway. Closure would probably extend for a period greater than one month, as the roadbed would have to dry out prior to reopening the highway to traffic. Damage to the highway and additional transportation costs due to rerouting of traffic are substantial. If the levees fail when Clear Lake is above a 20-year flood event, the resulting floodwater would flood Nice-Lucerne Cutoff between Nice and Lakeport, closing the road. Such a failure occurred in 1998, closing the road for over one month. Closure of either road restricts traffic between the communities on the north shore of Clear Lake with Lakeport and points west. Closure of both roadways would limit all traffic on the north shore to Upper Lake-Lucerne Road, a minor County roadway, or by driving around Clear Lake on State Highways 53 and 29. At a Level of Service C, the capacity of the Upper Lake-Lucerne Road is 483 vehicles per hour. The current traffic load for State Highway 20 is 6100 vehicles per day and for the Nice–Lucerne Cutoff is 5,420 vehicles per day. Average peak traffic rates are 670 and 406 vehicles per hour for Highway 20 and the Nice–Lucerne Cutoff, respectively. Closure of either road, and especially both roadways, would severely impact emergency services, especially emergency medical services. Lake County has two hospitals, one in Lakeport and one in Clearlake. Normally, ambulances in Nice and Lucerne serve the hospital in Lakeport. The additional travel time due to road closures will increase the risk to patients in the event of road closures.

Reclamation Road and Reclamation Cutoff pass through the Project area and would be flooded to significant depths during any levee failure. While inundation of the roads would cause limited damage, the return of traffic to the area as water levels recede, would damage the road surface requiring significant repairs to the roadway.

A high voltage PG&E transmission line passes through the Project area. The transmission line serves the communities of Upper Lake, Lakeport and portions of Mendocino County. The transmission line towers were not constructed to protect them from damage, should the ground at the bases be flooded. In the event of a flood, tower foundation failure could occur, disrupting electrical services for a large population.

Because several of the tower's foundations are below the normal full lake level, foundation flooding would continue for an extended period (several months), further hindering repair of any damaged towers.

Agricultural lands would be inundated during flood events. Orchards, vineyards and other agricultural operation near the north end of the project would be inundated for a period of a few weeks to two months. Since floods usually occur during the crops dormant period, damage would be limited. Agricultural operations that are located on land below the level of a normal full lake, such as the wild rice operations, would be more severely impacted. If a levee failure resulted in major structural damage, the area may not be drained until late summer or fall, probably causing loss of at least one year's crop. When the southern area flooded in 1998, operations to dewater the area (pumping 24-7 for over a month) were not able to begin until late August, causing complete loss of one year's crop plus the loss of seed stock for that year.

B. Flood damage reduction benefits of the project (100)

1. Does the proposed project provide for transitory storage of floodwaters? What is the total community need for transitory storage related to this watercourse and what percentage of the total need does this project satisfy? What is the volume of water and how long is it detained?

The Project area provides transitory flood storage for Clear Lake, although it would have insignificant effects on lake flooding. Based on surface areas, when Clear Lake rises above full lake, there is a 3.2 percent (1,400 acres/43,790 acres) increase in surface area (flood storage). For instance, the change in water surface elevation in Clear Lake from the "full" level to the 100-year flood level is 5.18 feet, a 3.2 percent reduction in this elevation change would be 0.165 feet, or two inches. This change in flood elevation is not significant and would not appreciably affect flood damages caused by Clear Lake. No credit has been claimed for flood damage reduction benefits on Clear Lake.

The Project will remove 1,600 acres of property and 20 homes from the 100-year floodplain that are currently "protected" by a substandard levee that has been estimated to provide a 4-year level of protection. Flood fights over the past 45 years have successfully protected most of the area from catastrophic flooding, however, these properties continue to be at high risk of flooding. Maintenance costs are high (approximately $100 per acre) and place a financial burden on the property owners. Continued deterioration of the levees due to foundation and slope failures will increase the risk to these properties in future years unless large quantities of funds are expended to upgrade the levee system.

2. Describe any structural and non-structural flood damage reduction elements of the project. (Examples of structural elements are levees, weirs, detention/retention basins, rock slope-protection, etc. Examples of non-structural elements are acquisition of property for open space, acquisition of land for flood flow easements, transitory storage, relocation of structures and other flood prone development, elevating flood prone structures, flood proofing structures, etc.)

Flood damage reduction elements of the Project are non-structural components. All property within the 100-year floodplain will be acquired in fee, structures will be demolished and/or relocated, infrastructure will be removed or floodproofed, and the existing substandard levees will be breached to allow the area to reflood in a passive manner. Normal water and floodwater will exchange between the Project area, Middle and Scotts Creeks, and Clear Lake without the need for human intervention. Rock slope protection and native vegetation will be used to minimize erosion in the Project area.

3. By what methods and by how much dollar value will the project decrease expected average annual flood damages?

The Corps determined flood damage reduction benefits in accordance with Corps regulations using a risk-based analysis. Damage and benefit figures were done on October 2001 levels, at an interest rate of 6 1/8 percent, and an assumed project life of 50 years. No future growth was included in the calculations. Property damages were estimated for residential, agricultural, autos and roads. Assumptions are as follows:

- Residential: The value of each structure was estimated on a "replacement cost less depreciation" basis, with contents estimated at 43 percent of the replacement cost. Depth damage curves were developed and each of the 20 structures individually evaluated.
- Agricultural: Crop and non-crop losses were calculated. Crop damages are estimated when substantial crop acreage is in production and inundated during a flood event. Crop damages are associated with deep flooding for prolonged periods of time (about 21 to 60 days). Single event damages are capped at the amount of lost production incurred in a given flood year. Non-crop damages are damages to irrigation systems, other farm installations, and include debris removal and leveling costs.
- Automobiles: These are losses due to damages of automobiles that are located at private homes during a flood event. Depth damage relationships developed by the Soil Conservation Service in 1983 were utilized. The number of vehicles per household is estimated at 1.7. The average value per vehicle is estimated at $7,400.
- Roads: Road damages are the cost of repairing or reconstructing the portion of the road that are damaged due to flooding. Paved and unpaved roads were evaluated. Damages were estimated based on road type, number of miles inundated at a damageable depth, and the average repair/replacement cost for each road type.
- Emergency Costs: Emergency costs are the additional costs that are incurred for evacuation and reoccupation of the floodplain. These costs were based on a cost of $12 per person per day, and an evacuation period of 60 days.

The analysis has estimated that the average annual cost of flood damage from $475,000 per year to $190,000 per year, a benefit of $285,000 per year.

4. How does the project affect the hydrologic and hydraulic conditions at the project site and adjacent properties?

a) Will the project reduce the magnitude of a flood flow, which could cause property damage and/or loss of life?

Flood depths due to Clear Lake, the flooding source for the Project area, will be not be affected by the project (see Item B.1). Essentially all flood damage reduction benefits are contained within the Project area. The benefits are due to removal of the residential and agricultural properties that are subject to damage from the floodplain.

b) What are the effects of the project on water surface elevations during a flood event which could cause property damage and/or loss of life?

Flood depths due to Clear Lake, the flooding source for the Project area, will be not be affected by the project (see Item B.1). By removing personal property and residents from the Project area, it is the equivalent of reducing flood depths to Zero in the Project area.

c) How are flow velocities impacted by the project during a flood flow which could cause property damage and/or loss of life?

Flow velocities in Rodman Slough will be reduced. As the Project area is being restored to fish and wildlife habitat, flow velocities in the Project area are not a threat to property damage and/or loss of life.

C. Restoration of natural processes (60)

1. Describe how any natural channel processes will be restored (for example: for channel meander, sediment transport, inundation of historic floodplain, etc.) and describe how these natural processes will affect flood management and adjacent properties.

The entire Project area will be restored to a natural habitat consisting of open water, freshwater emergent wetlands, riparian zones and upland habitat (oak woodland). The historic floodplain at the mouth of Scotts and Middle Creeks will be restored. As Clear Lake will inundate the Project area, the natural hydrology of a lacustrine, freshwater wetland will be restored. In addition to restoration of fish and wildlife habitat values, the wetland area will provide water quality benefits of sediment, phosphorus and nitrogen removal from the water column. Channels will be excavated to direct the flow of water from Middle and Scotts Creeks through the Project area, thereby improving the quality of water (sediment and phosphorus removal) that enters Clear Lake from their watersheds. In addition, the denitrification of lake water during the summer may provide some additional water quality benefits. Water quality improvement is one of the County's main objectives. Improved water quality in Clear Lake will improve the aesthetics for residents and visitors, improving the local economy.

Restoration measures include:

- Breach levees to allow water to automatically flow in and out of the Project area. The breaches will also serve as fish and wildlife passage areas.

- Planting of native wetland, riparian and brush/woody vegetation in the Project area.
- Floodplain habitat will be enhanced by creating islands using material excavated from the levee breaches and created channels. The island habitats will provide refuge for small mammals during the winter and breeding sites for birds. The remaining unused levees will also be restored as islands.
- Channels, sloughs and ponds similar to those that existed prior to 1920 will be created. They will be excavated prior to flooding of the Project site, therefore, can be constructed using conventional construction equipment.

2. Describe any upstream or downstream hydraulic or other effects (such as bank erosion or scour, sediment transport, growth inducement, etc.).

No significant upstream hydraulic affects are anticipated. The hydraulics of the Project and the upstream channels was reviewed, and it was determined that there will be minimal effects on upstream areas from the reduced backwater resulting from the Project.

3. If the project includes channel modification or bank protection work, will riprap or dredging be part of the design? If so, provide an analysis of potential benefits and impacts.

The goal of the Project is to restore the area to as near a natural system as possible, therefore, minimal bank protection work is anticipated. Small areas at the levee breaches have been proposed to be riprapped to prevent erosion from waters entering or leaving the Project area. Flow velocities in the Project area will be small, therefore, most of the erosion control measures being proposed will be addressed by using native vegetation.

Channels, sloughs and ponds similar to those that existed prior to 1920 will be created to direct flows through the Project area and encourage water circulation. They will be excavated prior to flooding of the Project site, therefore, can be constructed using conventional construction equipment.

D. Project effects on the local community (60)

1. How will the project impact future flooding on and off this site?

The Project area is currently threatened with flooding on a regular basis. Implementation of the Project will remove the threat of flood damage to life and property, as the entire Project area will be restored as fish and wildlife habitat. Much of the site is below the normal full level of Clear Lake, therefore, it will be flooded nearly every year. Some of the Project area would have been flooded during the drought of 1976-1977, when Clear Lake was at it lowest recorded level in the last 140 years.

2. How will the project affect emergency evacuation routes or emergency services and demands for emergency services?

Because the Project will increase the real threat of flooding on State Highway 20 and the Nice-Lucerne Cutoff, raising of the roads to above the level of the 100-year flood is proposed. This reduces the threat of road closures (see Item A.3), disruption of normal traffic, and ambulance traffic that must pass through the area to reach the local hospital.

By eliminating the substandard levee, the need for emergency services to conduct a flood fight, evacuate the area and provide temporary shelter during a flood event will be eliminated. This reduction in emergency services will allow the emergency resources to be utilized elsewhere in the County and State.

3. Explain how the project will comply with the local community floodplain management ordinance and the floodplain management criteria specified in the Federal Emergency Management Agency's National Flood Insurance Program (FEMA's NFIP).

The Project will not construct any structures that are subject to the requirement of the NFIP. 20 insurable homes and accessory structures will be removed from the floodplain, reducing the need for flood insurance. The Project area is proposed to be rezoned as "Open Space", which does not allow for the construction of homes and other buildings. All improvements (including channels, levee breaches, bridges, etc.) will be constructed so as to not increase flood depths on- or off-site. Current calculations show an insignificant reduction in upstream and downstream flood depths as a result of the Project.

The Project is consistent with Lake County's Floodplain Management Plan, which was adopted as part of the County's participation in the NFIP Community Rating System.

E. Value of improvements protected (70)

1. What is the assessed value of structural improvements that will be protected by the project?

Based on the Lake County Assessor's database, on December 4, 2003, the assessed value of all residential structural improvements in the Project area are $1,392,950. The Assessor's database indicates that all structural improvements in the project area are $1,789,866.

The assessed value does not include facilities that are located in easements or public right-of-ways, therefore, the value of roads and public utilities, such as the PG&E transmission line, are not included.

2. What is the estimated replacement value of any flood control facilities or structures protected by the project?

The economic evaluation conducted by the Corps of Engineers, indicates the replacement value less depreciation of the 20 floodprone residential structures in the Project area is $1,555,000 (October 2000 price level).

Three and one tenth miles of road are protected by the substandard levees. Roads include State Highway 20 and the Nice-Lucerne Cutoff, both major roadways serving the County and intrastate transportation. Two minor roadways serve the property owners in the Project area, Reclamation Road and Reclamation Cutoff. The replacement costs for these roads is approximately $4.2 million.

A major electrical transmission line crosses the Project area. The replacement cost, assuming rerouting is not required, is approximately $2 million. Local electrical service lines have an approximate replacement cost of $375,000.

No detailed estimates have been prepared for replacement of the levees, however, preliminary estimates are in excess of $6 million for replacement of the current levees with levees constructed to current standards.

V. (340 points) Wildlife and Agricultural Land Conservation Benefits

Proponent should provide a statement of the relative importance of the project's wildlife and agricultural land conservation benefits. DWR will use the statement and all other project materials to assign a fraction of the total benefits to each type (wildlife (F_w) or agricultural land conservation (F_a)) so that the fractions total unity. Actual points scored for each type of resource will be multiplied by the respective fraction for each resource, and the wildlife and agricultural scores resulting for each type of resource will be added together.

The Project will benefit fish and wildlife, both by restoration of significant portions of the habitat lost to development, and by improving water quality in Clear Lake. Restoration of the Project site will create the largest area of protected habitat in the Clear Lake area. The Project will restore the highly valuable riparian and wetland communities favored by many birds and restore significant areas of spawning habitat for the Clear Lake fishery.

The Project will not contribute to agricultural land conservation, therefore, no benefits are being proposed.

A. (340xF_w points) Wildlife Benefits

Habitat values refer to the ecological value and significance of the habitat features at this location that presently occur, have occurred historically, or will occur after restoration.
Viability refers to the site's ability, after restoration if necessary, to remain ecologically viable with minimal on-site management over the long-term, and to be able to recover from any natural catastrophic disturbances (fire, floods, etc.).

A1. Importance of the site to regional ecology (70)

1. Describe any habitat linkages, ecotones, corridors, or other buffer zones within or adjacent to the site. How are these affected by the project?

   The Project is adjacent to and directly linked to Clear Lake and Rodman Slough. The current habitat value of the Project area is limited, as a majority of the area is intensively farmed. Current linkages do not include linkages for the fishery between Clear Lake and the Project area. Nearly the entire Project area is included in the Significant Natural Area #10 in the NDDB, which contains coastal and valley freshwater marsh, bicarpellate western flax, tri-colored blackbirds, yellow-headed blackbirds, great blue heron and double-breasted cormorant rookeries, and osprey nests. Terrestrial species include black-tailed deer, coyote, bobcat, mountain lion, black-tailed hare, gray fox, skunk and river otter. Other avian species include bald eagles, golden eagles, songbirds and the mourning dove.

   Rodman Slough and its associated riparian woodlands have been identified as a major migratory stopover for songbirds. There is a potential for the return of the endangered yellow-billed cuckoo with the return of willow-riparian forest. Western pond turtles are found throughout the Slough, and freshwater sponges

occur occasionally in the Slough during flooding conditions. The Project will substantially increase the acreage and width of wetland habitats and reduce habitat fragmentation by restoring connections between disjoint habitat patches. It would also provide escape cover and protection from storms for waterfowl and water birds such as American white pelicans, western grebes, mallards and wood ducks, as well as high quality rearing habitat for young waterfowl and water birds. Other water birds such as western and Clark's grebes would benefit from increased nesting area and enhanced foraging opportunities.

Rodman Slough supports various species including: Northwestern pond turtle, great blue heron, California yellow warbler, American white pelican, osprey and American peregrine falcon. The bald eagle was recently observed nesting successfully for the first time in recent history at Bachelor Valley (approximately 4 miles northwest) and Jago Bay (approximately 16 southeast). There is presently little habitat for the elderberry beetle, however, upland revegetation with elderberry could promote habitat and potential local recovery success.

Restoration of the Project area will restore extensive riparian and freshwater emergent wetlands with significant "edge effects". Habitat values will increase substantially (869 habitat units per the Habitat Evaluation Procedure conducted by US Fish and Wildlife Service). Extensive shoreline wetland habitat would be created, which would be available for fish spawning, shelter, feeding and breeding. All linkages would be restored to historical levels, greatly improving the habitat value of Significant Natural Area #10.

2. Is the site adjacent to any existing conservation areas?

The Project area is directly across Rodman Slough from the Rodman Ranch Property. Rodman Ranch was recently purchased by the Lake County Land Trust, Lake County and the Wildlife Conservation Board to preserve the important habitat, including extensive freshwater emergent wetlands and a large Great Blue Heron rookery. Department of Fish and Game staff have been exploring the possibility of expanding the protected areas with the Clear Lake Wildlife Area Conceptual Area Protection Plan (CAPP), copy attached, that includes the Project area, adjacent riparian, wetland, and upland habitats, and the historic Tule Lake area located approximately one mile upstream of the Project on Scotts Creek.

3. Describe any plans for aquatic restoration resulting in in-stream benefits.

Approximately 1,400 acres of the Project will be restored by allowing Clear Lake to reflood the area. To enhance the habitat and water quality function of the area, additional restoration efforts include:

- The area will receive pilot plantings of native, riparian and brush/woody vegetation. Areas identified for revegetation include wetland, riparian and upland vegetation along selected areas to stabilize newly constructed areas

and accelerate the natural regeneration. Riparian vegetation will also be planted along levees no longer used for flood damage reduction to encourage the early establishment of new habitat. Revegetation areas would be selected upstream of other restoration areas to maximize the natural dispersal of wetland and riparian plant species downstream.

- Islands will be created in the restored area using material excavated from the levee breaches and created channels to enhance the floodplain habitat. Island habitats will provide refuge for small mammals during winter storm events and high lake levels. The islands will be allowed to revegetate naturally. Some plantings of native oak and associated plants would be included to encourage revegetation of indigenous species. The plants would be placed at an appropriate and similar density to existing oak habitat in the vicinity.
- Sloughs, channels and open water ponds will be excavated to maximize flood flow residence time and settle out fine sediment particles in the Project area. Multiple sloughs would be excavated for increased habitat diversity and more extensive edge habitat, reconnecting the historic floodplain and Hammond Slough to Clear Lake. Channels will ensure that flows from Middle and Scotts Creeks will traverse the Project area, providing increased residence time, encouraging sediment deposition and preventing a stagnant backwater condition.

4. Discuss any natural landscapes within the site that support representative examples of important, landscape-scale ecological functions (flooding, fire, sand transport, sediment trapping, etc.)?

The Project area is a natural “arm” of Clear Lake that functioned as a sediment trap for Middle and Scotts Creeks for millennia. Limited grading has occurred, with historic channel alignments evident in several locations. The Project is being designed based on historical photographs and maps to recreate, to the extent practicable, the natural landscape of the area. The entire floodplain area will be restored. There will be no structural components in the Project design, with the exception of infrastructure mitigation, that will require maintenance. Utilizing natural design will allow the area to be self sustaining. The area will trap sediment and function as it did prior to European development in the area.

A2. Diversity of species and habitat types (70)

1. Does the site possess any:
   i. areas of unique ecological and/or biological diversity?
   When restored, the Project area will be part of the largest wetland and natural area on the shores of Clear Lake. The riparian, marsh, open water and native upland oak woodland contribute to the high diversity of wildlife. The Project will help resolve numerous physical and biological problems in the Clear Lake Basin through the restoration of historic wetland habitat.
   ii. vegetative complexity either horizontally or vertically?

The Project area will possess horizontal and vertical complexity. Because the Project area will be hydraulically connected to Clear Lake, the open water, wetland and riparian habitats will be determined by the lake's hydrology. During the Reconnaissance Study phase, it was determined that the lake level predicted the habitat type on the shoreline. This habitat model was used to predict the amount of each type of habitat, see attached Figure 6. Upland habitats, such as oak woodland, will be developed on lands that are above the riparian zone. Because ground elevation determines the habitat type, a rich mosaic of habitats will be developed throughout the Project area.

2. Describe habitat components including year-round availability of water, adequate nesting/denning areas, food sources, etc.

Because the restored Project area will be hydraulically connected to Clear Lake, year round water will be available. Clear Lake fluctuates an average of approximately 5 ½ feet per year during the growing season and has established a natural band of wetland and riparian vegetation on its shoreline. The Project area will develop a similar vegetation pattern, which is based on the lake's water level.

The mosaic of habitat types and variation of ground surface elevation will provide a diverse ecosystem in the Project area. It will continue to support the diverse fish and wildlife populations that currently inhabit the Rodman Slough area, while greatly expanding the habitat and reducing the current habitat fragmentation. In order to maximize the nesting/ denning areas, islands will be created from excavated material to provide refuge from predators and floodwaters.

3. Describe any superior representative examples of specific species or habitats.

During Fall 1996, Corps staff and consultants observed fifty-two wildlife species in the Project area, see Table 1. Many of the species of wildlife observed are considered California Species of Special Concern

4. Does the site contain a high number of species and habitat types? List and describe.

As the list noted above describes, fifty-two species of wildlife were observed during a several day period in 1996. Many more species exist in the area, with the Lake County Audubon Society having identified over 90 bird species during their annual counts in the Clear Lake vicinity.

Existing habitats adjacent to the Project area include marsh, riparian, open water wetlands, upland oak savanna and oak woodland. Conditions in some areas

have not changed much since historic times. The existing vegetation is representative of the vegetation succession expected in the Project area.

5. Does the site contain populations of native species that exhibit important subspecies or genetic varieties historically present prior to European immigration?

Many of the species found in the Rodman Slough area are native to Lake County. Because of the Clear Lake basin's relative isolation from California's Central Valley, some species have developed distinct subspecies. A clear case is the Clear Lake hitch (*lavinia exilicauda chi*), which has been determined to be a subspecies of the Sacramento hitch that exists only in the Clear Lake basin. The Clear Lake hitch will have improved shoreline wetland habitat available when the Project is build and vegetation becomes fully established.

A3. Ecological importance of species and habitat types (100)

1. Discuss the significance of habitat types at this location and include any local, regional, or statewide benefits received by preserving or improving the area.

The Rodman Slough area contains mature riparian and wetland habitats that support a diverse selection of plants, fish and wildlife. Many of the species of special concern identified in the area will benefit from the reduction of fragmentation and increased acreage of the various habitats. The increase in habitat and breeding areas for many species of special concern, threatened or endangered species could provide a large reservoir of animals to repopulate areas that have suffered habitat damage and have lost these species.

2. Does the site contain any significant wintering, breeding, or nesting areas? Does it fall within any established migratory corridors? What is the level of significance? How are these affected by the project?

There are large breeding populations of great blue heron, double-breasted cormorant, California yellow warbler, and tri-colored blackbird in the lands adjacent to the Project. Restoration of the native habitats in the Project area will increase the availability of habitat and improve the size and health of the breeding populations.

Clear Lake is within the Pacific Flyway and serves as a stop for many migratory species, especially songbirds. During the dry period of 1987 through 1992, the Clear Lake area served as a major migratory stop for migrating geese and ducks. With the return of flooded rice fields during the fall in the Central Valley, the population of migrating waterfowl has decreased. Ducks and geese still stop in flooded rice fields in the Project area. The increase in shallow water, wetland and riparian habitats from the Project should improve the conditions for migratory waterfowl. Since significant shallow water habitat will be available, even in dry years (some of the Project area would have been flooded in Fall 1977 if the

levees had not existed), the area will serve as a valuable habitat resource in drought years.

3. Describe any existing habitats that support any sensitive, rare, “keystone” or declining species with known highly restricted distributions in the region or state. Does the site contain any designated critical habitat? How are these affected by the project?

The existing riparian and open water areas along Rodman Slough and on Clear Lake provide hunting areas for bald eagles, a threatened species. Bald eagles are frequently seen in the area, and there is a nesting pair approximately four miles away. The Project will increase the amount of similar habitat, which should improve hunting opportunities and survival of the species. No other threatened or endangered species have been observed in the area, however, the Project will create riparian and open water habitat that could support the California red-legged frog (has not been identified in the Project vicinity). Establishment of elderberry bushes in the Project area may encourage the establishment of a population of valley elderberry longhorn beetles (has not been identified in the Project vicinity).

There are numerous Species of Special Concern (SC) that have been identified in the Project area. These animals will have significantly enlarged riparian, wetland and open water habitats that should improve the viability of their populations. Some SC species identified in Rodman Slough include: Sacramento perch, Clear Lake hitch, tricolored blackbird, white-faced ibis, white-tailed kite, and American bittern.

4. What is the amount of shaded riverine aquatic (SRA) and riparian habitat to be developed, restored, or preserved?

The Project will protect 45 acres of existing riparian habitat, and add an additional 113 acres of riparian habitat. Most of the existing riparian habitat is not adjacent to flowing streams, however, the project will restore the channels, converting this riparian to SRA. Nearly all the proposed riparian habitat will be near channels and open water, thereby providing a total of 158 acres of SRA when the Project is completed.

In addition, California Department of Fish and Game have estimated there are 120 acres of additional riparian habitat in Rodman Slough that is not within the Project area. This is essentially all SRA. The Project will help protect and enhance the adjacent riparian habitat (SRA).

A4. Public benefits accrued from expected habitat improvements (60)

1. Describe present public use/access, if any. For instance, does or will the public have access for the purpose of wildlife viewing, hunting, fishing, photography, picnics, etc.

Rodman Slough is currently used extensively for kayaking, wildlife viewing, hunting, fishing, photography and picnics. These uses will expand into the Project area as restoration occurs. Because the Project area will be connected to Clear Lake, access is guaranteed by travel on waters of the State. To ensure quality habitat values, a speed limit has been proposed for the Project area (one currently exists in Rodman Slough).

The Rodman Ranch acquisition has greatly improved recreational facilities in the area.

- The County of Lake recently acquired a park parcel on Rodman Slough on the Nice-Lucerne Cutoff. The park has not been fully developed. Plans include picnic areas, a small boat launching facility and restrooms.
- The Department of Fish and Game/Wildlife Conservation Board purchased water frontage along the Nice-Lucerne Cutoff, as well as areas of extensive wetland and riparian habitats. The road frontage is used extensively for fishing, wildlife viewing and picnicking.
- The Lake County Land Trust acquired the heron rookery adjacent to the DFG property. Hiking trails have been developed and the area is actively promoted as a wildlife viewing area. The Land Trust plans to develop an existing house on the property into a visitors/outreach center.

The County, in conjunction with the US Forest Service, local tribes, and interested parties, is actively pursuing the development of a Watershed and Cultural Discovery Center in the Project area. The Center is independent of the Project, however, there is a consensus to closely link the Center and the Project. Several locations have been discussed, all of which are adjacent to the Project.

The Project as currently proposed does not include extensive recreational facilities. Pull outs and information kiosks have been included, however, developed facilities, such as picnic tables, restrooms and trails have not been included at this time. It is the District's and County's intent on making the Project area open to wildlife viewing, hunting, fishing, photography, picnics, watershed education, and related activities.

The Department of Fish and Game has indicated in the Clear Lake Wildlife Area CAPP the desire to open the area to hunting, fishing and other recreational activities.

2. Discuss areas on the site that are critical for successfully implementing landscape or regional conservation plans. How will the project help to successfully implement the plans?

The Project will help resolve numerous physical and biological problems in the Clear Lake basin through the restoration of historic wetland habitat.

The entire Project area is a critical component in the restoration of the Clear Lake ecosystem. The nutrient filtering and removal capabilities of the restored wetland ecosystem are critical in improving water quality in Clear Lake. The Project compliments the County's efforts to reduce watershed erosion, restore riparian areas, and reduce nutrient loading to Clear Lake.

The Project is critical for the Department of Fish and Game's proposed Clear Lake Wildlife Area. The conservation, protection and restoration of significant wetland, riparian and upland habitats in one of the few remaining natural areas on Clear Lake will improve conditions for the fish and wildlife in the Clear Lake watershed.

3. Describe the surrounding vicinity. Include the presence or absence of large urban areas, rapidly developing areas, and adjacent disturbed areas with non-native vegetation and other anthropogenic features. Do any surrounding areas detract from habitat values on the site?

The Project area is the former delta of Middle and Scotts Creeks, formed as the creeks entered Clear Lake. Clear Lake is immediately south of the Project area, with rolling hills of primarily annual grassland and valley-foothill hardwood habitats on the east and west sides of the Project area. The Scotts and Middle Creek floodplains exist to the north and northwest of the Project. The lower reaches of Scotts and Middle Creeks are contained within levees constructed in 1958 by the Corps, which have disconnected the streams from the floodplain. The majority of the Scotts and Middle Creek watersheds are steep mountains extending up to 3,300 feet above the Project area. The mountains are a mosaic of chamise chaparral, mixed chaparral, closed cone pine/cypress, valley foothill conifer, valley foothill riparian, montane hardwood, montane hardwood conifer and montane riparian habitats.

The area is largely rural, separated from the developed communities of Nice, Upper Lake and Lakeport by distances of one half to one mile. Immediately adjacent to the property are agricultural operations, with crops such as wine grapes, walnuts, pears, and strawberries. Cattle and sheep grazing operations also exist in the area. Rural residential properties (ranchettes of 2 to 20 acres) also border the project area. Development has been slow in and adjacent to the Project area, with little future growth anticipated. On the east side of the Project area is the Robinson Rancheria, including residential areas and a casino.

Most of the grasslands and agricultural land surrounding the Project are vegetated with non-native, annual grasses. Most of the trees and riparian vegetation is of native origin, however, there are several groups of arundo donax in Rodman Slough that are scheduled for eradication in the near future. Revegetation will be with native species in order to maximize the habitat benefits of the Project.

At the current and anticipated levels of development, the surrounding areas will not detract from the habitat values of the Project.

4. Describe compatibility with adjacent land uses.

Due to the rural nature of the Project area and adjacent lands, the Project is compatible with adjacent land uses. The open space component of the Project will enhance the property values of the majority of the adjacent residential properties. The western side of the Project is bordered by Rodman Slough, an existing natural area. The developed portion of the Robinson Rancheria is separated by State Highway 20 from the Project site. The Rancheria supports the project and considers it an asset to their property and heritage.

A5. Viability/sustainability of habitat improvements (40)

1. Describe any future operation, maintenance and monitoring activities planned for the site. How would these activities affect habitat values?

The Project is being designed to mimic a natural system as closely as practicable. Long term goals will not require any maintenance of the restored property as it returns to a natural state.

During the first three years after completion of construction, the Corps will monitor and maintain the project to ensure the restoration objectives are met. This includes monitoring to ensure the establishment of native vegetation (80% cover) and removal of non-natives, such as arundo donax.

After three years, the Project is turned over to the local sponsor (the District) for operation and maintenance in perpetuity. Some limited thinning may be required to ensure the hydraulic function of the Project, however, no significant maintenance activities are anticipated in the Project area.

2. Does the site contain large areas of native vegetation or is it adjacent to large protected natural areas or other natural landscapes (for example, a large stand of blue-oak woodland adjacent to public land)?

The Project area contains numerous stands of native vegetation, including blue oak woodland, willow and cottonwood riparian forests, and established stands of tule (*scirpus*). The Project is adjacent to Rodman Slough, which contains extensive riparian (120 acres), wetland (69 acres) and upland (150 acres of oak savanna) areas that will facilitate revegetation of the Project area.

3. Is the watershed upstream of the site relatively undisturbed or undeveloped and likely to remain so into the foreseeable future? Describe its condition.

The Middle and Scotts Creek watersheds are largely undeveloped. Approximately 52.5 percent of the watersheds are managed by the Federal

government (USDI Bureau of Land Management and USDA Forest Service) and will not be developed. The remainder of the watershed is primarily agricultural and rural lands that will not receive high density development. The only developed areas are Blue Lakes, a recreational area on Scotts Creek, and the community of Upper Lake. The Blue Lakes area is unable to expand significantly because of very steep mountainsides and a limited amount of developable land. Upper Lake is a small community that serves the local agricultural area, with many residents commuting to jobs in Lakeport and Ukiah. Upper Lake is not growing rapidly, nor is it anticipated to do so in the near future.

The watersheds are generally healthy, however, anthropogenic impacts include extensive gravel mined areas on Scotts and Middle Creeks that have resulted in downcutting and loss of riparian vegetation. Gravel mining has decreased to near non-existent levels due to damage caused and local regulations, and the damaged areas are gradually recovering and revegetating. Local Coordinated Resource Management and Planning (CRMP) groups are facilitating stream and watershed restoration efforts. The watersheds are anticipated to become healthier in the future, as the CRMP process encourages wise land stewardship throughout the watershed.

4. Describe any populations of native species or stands of native habitats that show representative environmental settings, such as soil, elevations, geographic extremes, or climatic conditions (for example, the wettest or most northerly location of a species within the state.)

The habitat in Rodman Slough and on the undeveloped and lightly developed western edge of the Slough are indicative of the potential habitat of the Project area. The area currently supports a large great blue heron rookery, a large double-breasted cormorant rookery, a large tri-colored blackbird population and a large Northwestern pong turtle population. Restoration of the Project area would significantly increase the potential breeding habitat for Clark's and western grebes, which currently breed in the large tule beds eight miles to the south. The Project will restore a large lacustrine, freshwater emergent wetland, which are rare in the State of California

VI. (320 points) Miscellaneous Benefits and Quality of Proposal

A. Size of request, other contributions, number of persons benefiting, cost of grant per benefited person (40)

Estimated Total Project Cost	$38,656,000
Amount of FPCP Grant Funds Requested	$14,214,000
Amount of Local Funds Contributed	
Amount of In-kind Contributions	
Additional Funding Sources (Corps)	$24,442,000

As a Federally authorized project, the Corps of Engineers participates in 65 percent of eligible costs, with "local sponsor(s) providing 35 percent of the eligible costs plus other ineligible costs. The budget also includes County staff time required to administrate and participate in the Project. County staff time was estimated based on the staff time required during the Feasibility Study phase of the Project. The budget above is prepared utilizing the Corps November 18, 2002 "fully funded" cost estimate. The "fully funded" estimate inflates cost values to the estimated construction date, therefore, the estimate does not agree with the estimates in the Feasibility Study, which are based on the October 2001 cost.

The proposal includes a $300,000 trust fund for operation and maintenance. The trust fund would pay for operation and maintenance over a 50 year period, based on the initial year's O&M cost at $10,000, with costs inflating at 4 percent per year and a 6 1/8 percent discount rate.

Number of persons expected to benefit	378,000
Flood Protection Corridor Funds per person benefited.*	$ 36.81

(* Count as beneficiaries those receiving flood benefits, recreational users of habitat areas protected by the Project, and consumers of food products from agricultural areas conserved by the Project.)

We have counted County residents (58,000), recreational users and tourists (1.6 million visitor days/5 days/visitor) as beneficiaries of water quality benefits from the Project.

This is a request for funding for Phase 4 of a large project. The estimated expenditures for Phases 1 through 3 (Phase 2 and 3 are not complete) are as follows:

Estimated Total Project Cost	$ 3,083,000
Amount of Local Funds Contributed	$ 288,182
Amount of State/Grant Contributions	$ 878,318
Additional Funding Sources (Corps)	$ 1,916,500

B. Quality of effects on water supply or water quality (90)

1. Will water stored by the project provide for any conjunctive use, groundwater recharge, or water supply benefit?

The project will not provide for conjunctive use, groundwater recharge or increased water supply.

2. Does the project fence cattle out?

The Project is designated as an ecosystem restoration project in the Federally authorizing legislation. Corps regulations require land for ecosystem restoration projects be purchased in fee and no agricultural activities be permitted. Therefore, we will not permit cattle grazing in the Project area unless required to meet adaptive management goals. Cattle grazing is not anticipated at this time. Much of the Project area will be in open water and freshwater emergent wetland habitats, which are not suitable for cattle grazing and will not be grazed. Adjacent property owners with cattle will be required to fence cattle from the area.

3. Does the project pass water over newly developed fresh water marsh?

Flows from Middle and Scotts Creeks will be routed through the Project area for the natural filtering and nutrient removal benefits of freshwater wetlands. The Project will restore 765 acres of wetland, 230 acres of riparian and 405 acres of open water which will receive the flows from the two creeks. In addition, the hydraulic connection to Clear Lake will allow water to circulate with the lake all year providing additional water quality benefits.

4. Does the project trap sediments?

The Project is anticipated to trap 40 percent of the sediment and nutrients entering Clear Lake from Scotts and Middle Creeks. The removal of sediment also removes phosphorus inflow to Clear Lake. A 40 percent reduction in phosphorus loading is anticipated to reduce chlorophyll average concentrations in Clear Lake by 33 percent, a significant improvement.

C. Quality of impact on underrepresented populations or historic or cultural resources (60)

1. Does the project benefit underrepresented populations? Explain.

The Project does not target underrepresented populations. Benefits will be realized by underrepresented populations, as the benefits of the Project will beneficially impact the economy of Lake County, providing more jobs in the tourism industry and support businesses.

2. Are historical or cultural resources impacted by the project? Explain.

Based on a literature search, there are seven previously recorded sites (3 prehistoric, 1 prehistoric and historic, and 3 historic) that could be affected by this alternative. The locations of breaches, channels, sloughs and plantings could include direct physical destruction or alteration of any cultural resources that are present, which would be considered significant. All practical measures such as avoidance and preservation in place to avoid adverse effects on cultural resources will be implemented. Other mitigation measures will be considered if significant impacts are unavoidable. Local Native American tribes have been consulted throughout the Project development and will continue to be integral partners in Project implementation.

D. Technical and fiscal capability of the project team (60)

1. Does the project require scientific or technical expertise, and if so, is it provided for in the grant proposal?

The Project requires technical expertise in the fields of Landscape Architecture, Environmental Engineering, Hydraulic Engineering, Soils Engineering, Geotechnical Engineering, Structural Engineering, biological expertise, Environmental Planning, cultural resource management, and real estate acquisition. The District is working with the Corps, Department of Fish and Game and local Native American tribes to ensure the necessary expertise is available throughout the Project implementation. Most of the expertise is being provided by the Corps staff from the Sacramento District office. Funds for necessary staff participation are included in the Project cost.

2. Grant funds will be available in phases. What monitoring and reporting mechanisms are built into your administrative plan to track progress, initiation, and completion of successive phases?

The District will be working closely with the Corps during Project implementation. During the Project, there will be monthly staff meetings, monthly progress reports and budgetary statements prepared by the Corps Project Manager that will allow the District to participate in and track Project progress. Meeting attendance and these reports will be made available to the Grant Project Manager.

3. Please outline your team's management, fiscal and technical capability to effectively carry out your proposal. Mention any previous or ongoing grant management experience you have.

The Lake County Flood Control and Water Conservation District is administered by the staff of the Lake County Department of Public Works (DPW). In addition to the District, DPW administers the County Road Department and multiple public projects throughout the County. DPW's administrative staff actively tracks multiple budgets and grants as part of its standard operating procedure. The primary DPW staff involved with this project includes:

- Robert Lossius, Assistant Public Works Director: Primary tasks are to ensure project progresses and coordinate staff and partners in active pursuit of the Project objectives.
- Ed Townley, Deputy Director – Administration: Primary tasks are to disperse and track funds from grants and other sources, oversee agreements and prepare invoices.
- Thomas Smythe, Water Resources Engineer: Primary tasks are to track day to day Project activities, provide technical review of Corps products, and coordinate staff and partners.

The above staff have been involved with and worked on the following grants:

Grant	Time Period	Grant Amount	Total Project Cost
EPA Clean Lakes, Clear Lake	1992-1994	$100,000 EPA/SWRCB	$160,000
EPA 319h, Scotts Creek Watershed	1994-1998	$120,297 EPA/CVRWQCB	$160,400
EPA 205j, Clear Lake Basin Watershed Analysis	1995-1999	$75,000 EPA/CVRWQCB	$100,000
Weed Management Program on Clear Lake	1996-1999	$132,000 CDFA	$132,000
Watershed Awareness Program	1995-1996	$84,830 USDA FS	$84,830
Community Entrepreneurial Watershed and Water Quality Program	1996-1998	$80,000 USDA FS	$80,000
Upper Lake Watershed Analysis	1997-1999	$46,605 USDA FS	$46,605
EPA Wetlands Partnership	2000-present	$56,250 EPA	$75,000
Proposition 204 Middle Creek Flood Damage Reduction and Ecosystem Restoration Project – Feasibility Study	1999-present	$495,000 SWRCB $247,500 State Reclamation Board	$1,583,000
Big Valley Groundwater Update	2002-present	$179,004 DWR	$179,004
Calfed Watershed Program – Middle Creek FDR and Ecosystem Restoration Project – Planning, Engineering and Design	2002-present	$135,818 Calfed Watershed Program	$1,500,000

E. Coordination and cooperation with other projects, partner agencies, and affected organizations and individuals (80)

1. List cost sharing and in-kind partners and any other stakeholders involved with your project and indicate the nature of their contribution, if any. Address the team's ability to leverage outside funds.

The State Reclamation Board (Board) participated as a partner in the Project during the Feasibility Study. DWR staff has indicated the Board is not authorized by State law to participate in ecosystem restoration projects. DWR has indicated they may only participate in the flood damage reduction portion of the project, or approximately 9.8 percent of the project cost. Utilizing the current "fully funded" estimate, this would amount to $655,490 ($38,221,000 x 35% x 9.8 % x 50%) of the construction cost. Increased participation by the Board would require special State legislation authorizing the Board's full participation in this Project. Lake County is considering having such legislation drafted. At this point, no funding has been budgeted by the State for the Board's participation in the planning, engineering and design phase (the current phase) of the Project or construction. The Board is a potential partner for the Project, however, they have not committed to participating in future phases of the Project.

The California Department of Fish and Game (DFG) staff has expressed an interest in the Project from the beginning. They have recently prepared the Clear Lake Wildlife Area Conceptual Acquisition Protection Plan (CAPP), which proposes purchase of approximately 3,225 acres of land for the "…conservation, protection, and restoration of significant wetland and upland habitat in one of the few remaining areas on Clear Lake." The CAPP includes acquisition of the Project lands plus additional adjacent lands. The CAPP discusses the complimentary nature of the Corps and DFG projects. If all lands in the Project area were purchased as recommended in the CAPP, the entire "local share" of the Corps project would be paid. At this time, the CAPP has been through the Wildlife Conservation Board (WCB) Land Committee and has been recommended for approval, but has not been agendized or adopted as an official project by the WCB. At this time, a WCB Project Manager has not been assigned to the CAPP. DFG has not committed to participate in future phases of the Project.

2. Does your project overlap with or complement ongoing activities being carried out by others (such as CALFED, the Sacramento and San Joaquin River Basins Comprehensive Study, the Delta levee program, local floodplain management programs, the Reclamation Board's Designated Floodway program, or a multiple objective regional or watershed plan)? If so, indicate any coordination that has taken place to date or is scheduled to take place in the future.

The Project does not overlap any of the projects identified in the CALFED Record of Decision or other State programs. The Project does compliment the goals of CALFED and the Comprehensive Study of integrated multi-objective management.

The Project is very large in relationship to the Clear Lake watershed and should show significant beneficial effects when it is completed. It demonstrates how a project can be designed to meet multiple objectives and provide multiple benefits. The project needs to be completed to show how these objectives and benefits can be met and benefit the community as a whole.

The Department of Water Resources used the project as a model of how to evaluate multiple benefits, even though they are normally not considered in the same analysis. The DWR Draft Report *Multi-Objective Approaches to Floodplain Management on a Watershed Basis,* January 10, 2000. The Draft Report will be updated to reflect the feasibility level costs developed by the Corps. Some of the techniques used in preparation of this report have already been incorporated in the Sacramento and San Joaquin River Basin Comprehensive Study. As these methods are refined, they may lead the way the Corps analyzes projects which have multiple objectives and/or benefits.

As identified in the Clean Lakes Implementation Plan (July 1994), copy enclosed, the Project is one step in the process of restoring damaged habitat and the water quality of the Clear Lake watershed. Reconnection of this large previously reclaimed area, as a functional wetland is anticipated to have a significant affect on the watershed health and the water quality of Clear Lake.

The Project is one of the recommended actions in the Lake County Floodplain Management Plan, adopted as part of the County's participation in the Community Rating System.

3. Will this application, if approved, begin the next phase of a previously approved project or advance an ongoing project substantially toward completion?

This Project is the fourth, and final, phase of the Middle Creek Flood Damage Reduction and Ecosystem Restoration Project (Project).

- Phase 1, the Reconnaissance Study, was completed in May 1997.
- Phase 2, the Feasibility Study and environmental documentation, is nearly complete. The NEPA and CEQA process should be completed, Record of Decision and Notice of Determination, respectively, by May 2003.
- Phase 3 is to prepare detailed plans, specifications and cost estimates of the selected alternative for the construction phase of the Project. Phase 3 is anticipated to start in June 2003 and will be completed by June 2005.
- Phase 4 is to acquire land and to construct the Project. Land acquisition may begin during Phase 3, however, costs incurred for land acquisition may not be

counted as “match” for the Federal costs until the Project is authorized by Federal legislation. The County is actively pursuing getting the Project authorized in the next Water Resources Development Act (WRDA), possibly in 2003.

Provided adequate funding is available, Project construction is anticipated to be complete by Fall 2008.

4. Describe how the proposal demonstrates a coordinated approach among affected landowners, local governments, and nonprofit organizations. If other entities are affected, is there written support for the proposal and a willingness to cooperate?

Public participation has been an integral part of Lake County's management of natural resources. In 1990, the Clear Lake Basin Resource Management Committee (Basin Committee) was formed. The Basin Committee was formalized as a Coordinating Resource Management Planning (CRMP) group and a Memorandum of Understanding was developed. The Basin Committee was formed to facilitate cooperation between the public and government agencies in the management of the Clear Lake Basin. In 1998, the Basin Committee was expanded to include the entire county and was renamed the Lake County Coordinating Resource Management Committee (RMC). The RMC and its issue-based subcommittees draw people together from each of Lake County's watersheds, namely Clear Lake, Cache Creek, Putah Creek and Lake Pillsbury-Eel River.

The RMC functions as a consensus-based partnership approach for the community to manage and restore its valuable natural resources and watersheds.

The Committee's purpose is to maintain and enhance the ecosystem and economy of the Clear Lake Basin. RMC objectives include:

- Improve coordination of research, planning, land management, and resource management by private, local, state, and federal agencies by sharing information, data collection, research, policy development, and other activities.
- Through a coordinated effort, the Committee will develop comprehensive, technically sound recommendations for orderly and quality development, environmental protection, and wise use of the Clear Lake Basin. The recommendations will address identification and solution of problems concerning the Clear Lake Basin, balancing the environmental concerns, private property rights and the customs and culture of the County.

  The RMC includes 28 public members and the following partners:

  - County of Lake (Air Quality, Environmental Health and Public Works and Board of Supervisors) Vector Control, Special Districts, Agriculture Department,

- USDI Bureau of Land Management
- USDA Forest Service
- US Environmental Protection Agency
- State Water Resources Control Board
- Central Valley Regional Water Quality Control Board
- US Army Corps of Engineers
- Dept. of Fish and Game
- State Reclamation Board
- State Dept. of Food & Agriculture
- Local Tribes (7)
- U.C. Davis – Clear Lake Environmental Research Center
- City of Lakeport
- City of Clearlake
- Department of Water Resources
- USDA Natural Resources Conservation Service
- East Lake Resource Conservation District
- West Lake Resource Conservation District
- U.C. Cooperative Extension
- State Lands Commission
- State Boating and Waterways
- Lake County Marketing Program
- Lake County Business Outreach & Response Team

RMC Subcommittees include:

- Clear Lake Advisory Subcommittee
- Water and Land Subcommittee
- Database Subcommittee
- Bio-Resources Subcommittee
- L.C. Fish and Wildlife Advisory Committee
- Upper Putah Creek Stewardship
- Middle Creek CRMP
- High Valley / Schindler Creek CRMP
- Scotts Creek CRMP
- Big Valley Creek CRMP
- Pillsbury CRMP
- Lower Lake CRMP
- Clear Lake (Upper Cache Creek) Watershed CRMP

The RMC has worked on the following projects:

- Clear Lake Clean Lakes Report (314 & DPW)
- Grading Ordinance (Community Development)
- Erosion Prevention and Education Committee (Community Development)
- Wetlands Policy
- Oak Policy
- Clear Lake Basin 2000 (Special Districts)
- Clear Lake Basin Management Plan (DPW)
- Upper Lake Watershed Analysis (USDA Forest Service & DPW)
- EPA Wetlands Grant (DPW)
- Middle Creek Restoration Project (BIA & Robinson Rancheria)
- Rodman Ranch Acquisition (Lake County Land Trust)
- Middle Creek Ecosystem Restoration Project (DPW)
- Clear Lake Watershed Analysis (205j & DPW)
- Scotts Creek Watershed Project (319h & DPW)
- Community Entrepreneurial Watershed and Water Quality Improvement Grant (USDA Forest Service & DPW)
- Clear Lake Fisheries Management Plan (DFG)

- Groundwater Export Ordinance (DPW)
- Big Valley Groundwater Management Plan (AB 3030, DPW)
- Upper Putah Creek Watershed Management Plan (USACE & USDA NRCS)
- Schindler Creek Watershed Plan (USDA NRCS)
- Non-hydrilla Aquatic Plant Management Program (DPW)
- Clear Lake Economic Study (USDA NRCS)
- Sulphur Bank Mine (USEPA)

As each of these projects was developed and implemented, public input was obtained through the RMC. Projects developed by cooperating agencies, in parentheses, are brought before the RMC to solicit input, while others were developed by the RMC, such as the Wetland and Oak policies. This process has ensured the public's participation in the management of the County's natural resources.

In addition to discussion and input from the RMC, the District and the Corps have conducted a separate public participation program for the Project. Numerous public workshops and meetings have been held during the Reconnaissance and Feasibility Study phases of the Project. These meetings involved stakeholders and landowners in the entire county, including landowners in and adjacent to the Project area. These meetings have solicited input that has been incorporated into the preliminary design. These meetings will continue throughout the design and implementation phases to ensure public involvement in the design and management of the area.

Because of the water quality improvement the Project will have on Clear Lake, there is widespread support of the Project in communities all around Clear Lake. This is the Number 1 priority project for the County Board of Supervisors. The Project is supported by the Robinson Rancheria, Upper Lake Rancheria, Scotts Valley Rancheria and the Big Valley Rancheria.